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Hellenic Chapter

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ENERGY IN BUILDINGS

EMEA 2024

Europe, the Middle East & Africa

FRIDAY - SATURDAY

NOVEMBER 22-23, 2024

@ 9:00-18:00

SESSIONS:

- SUSTAINABILITY
- HEALTH & SAFETY
- DECARBONIZATION
- TECHNICAL SOLUTIONS
- DIGITAL ENVIRONMENT
- POLICIES & LEGISLATION
- ENERGY EFFICIENCY FIRST
- RESILIENCE TO CLIMATE CRISIS

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Investment Opportunities
in High Performance Buildings

Aris Papadopoulos
President & CEO ZEB SA

Reduce Energy Consumption

- ❖ A building project is an opportunity to reduce your energy consumption and operational costs, and throughout the design process, you can expect to discuss building performance with your architect.
- ❖ During this presentation , consider your Return on Investment (ROI). While some high-performing systems may increase the initial budget, the cost will be made up through energy savings. Focusing on the systems that provide an ROI will help you get the greatest value for your money.
- ❖ In this presentation we will discuss the systems and services that have the most significant impact on performance and provide an ROI, helping you decide where to invest your budget.



Systems and Services that Improve Building Performance

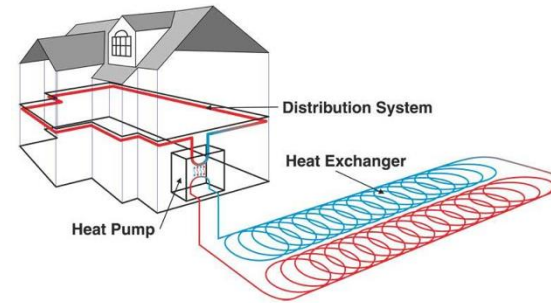
1. High-Performing Mechanical Systems

The primary job of a mechanical system is to heat and cool interior spaces and circulate fresh air. Mechanical systems tend to have the greatest impact on energy costs, so it's important to explore your options.

Highly efficient mechanical systems have a higher initial cost but offer a significant ROI. Some points for consideration are:

- **Lifecycle cost analysis**
- **Partial loads efficiency** instead of nominal efficiency
- **Higher efficiency** vs high initial cost over lifecycle

Energy modeling can inform decisions adequately



2. Renewable Energy Systems

On-site renewable energy sources like PVs reduce your building's Energy Use Intensity (EUI), the amount of energy used per square foot annually. They also reduce your reliance on the centralized power grid, lowering energy costs.

Like high-performing mechanical systems, renewable energy sources offer a quick payback.

Systems and Services that Improve Building Performance

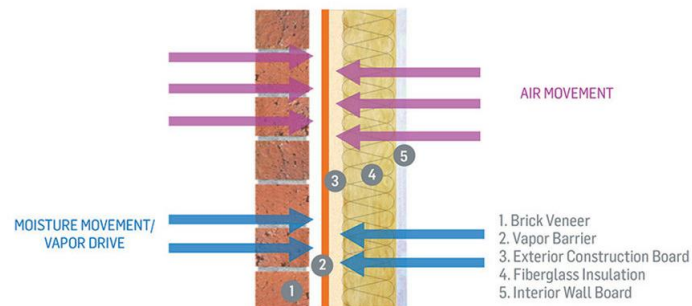
3. Envelope

Building envelope is a critical element for building performance and should be addressed early in the design process.

Some element that should be taken into account are:

- **Window to wall** ratio
- **Window performance** over real use period and overheating during summer (U vs SHGC)
- **Wall and roof** insulation
- **Visual performance and daylight**

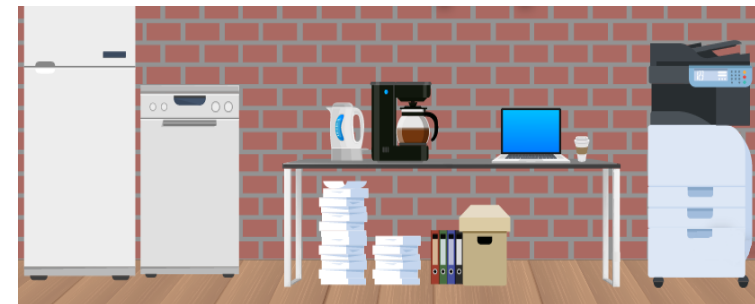
Successful design can **enhance occupants' thermal and visual comfort**—a benefit that is hard to quantify.



4. Energy-Efficient Equipment

Plug load refers to the energy used by equipment plugged into outlets, including **servers, computers, printers, appliances, and more**. Reducing plug load can be challenging, but Investing in energy-efficient appliances can help reduce your overall plug load. Furthermore, investment in technology that manages equipment so that it adjusts to occupancy requirements and optimizes its use.

In an energy efficient building **plug loads can reach up to 40%** of total loads.



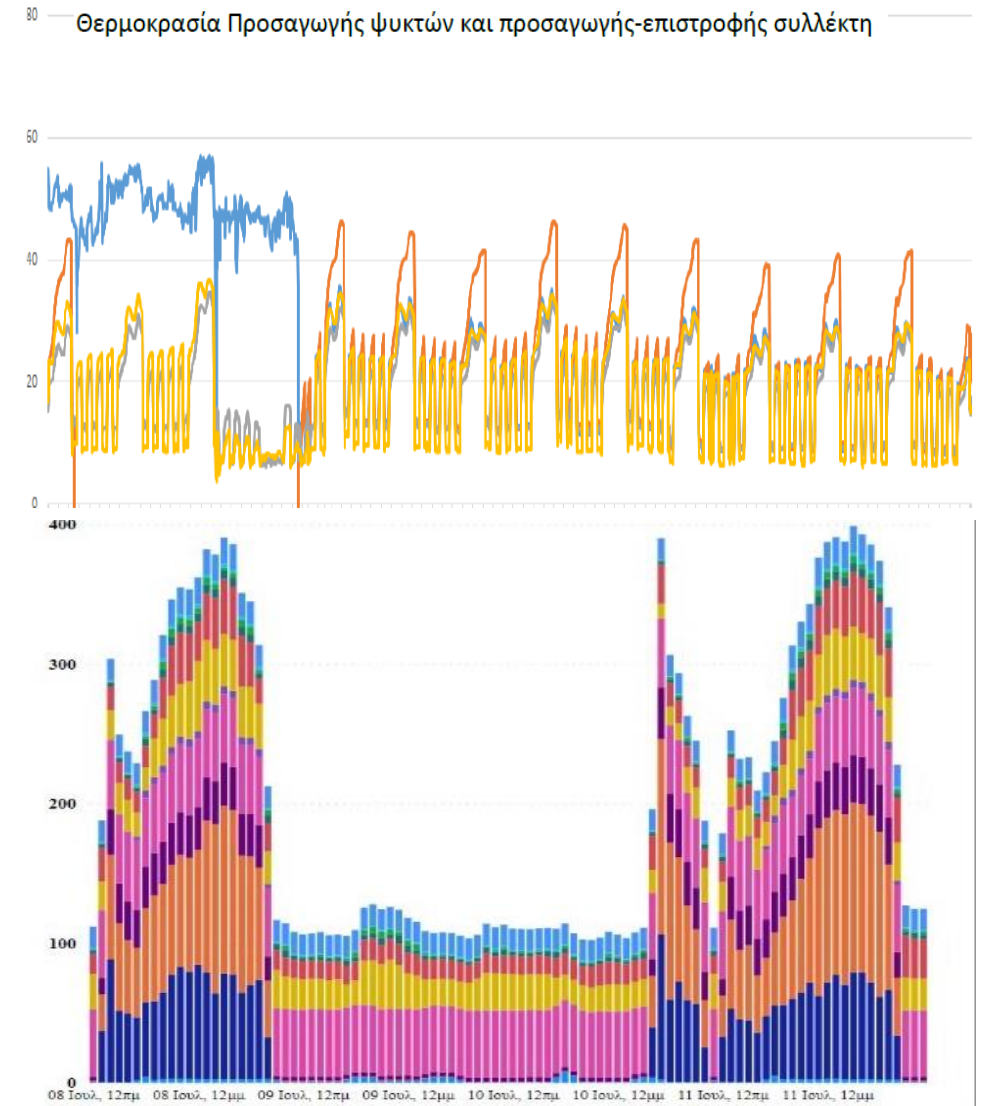
Systems and Services that Improve Building Performance

5. Integrated Building Energy Management Systems and Optimized Control

In order to for the building to perform efficiently an adequate hardware for control should be installed and successful control strategies should be set up. Installing a high-class hardware does not guarantee optimal performance. The following elements should be considered:

- Targeted metering equipment
- Adequate central automation coupled with occupants' controls
- Through integration of sensor devices and E/M equipment to control
- Data recordings
- Setting sequences of operation for optimal control
- Daylight control
- Energy alarming (not only malfunctions) and performance monitoring
- On-going commissioning

Successful design, setting of optimal sequences and ongoing commissioning enhance energy performance and occupant satisfaction



Systems and Services that Improve Building Performance

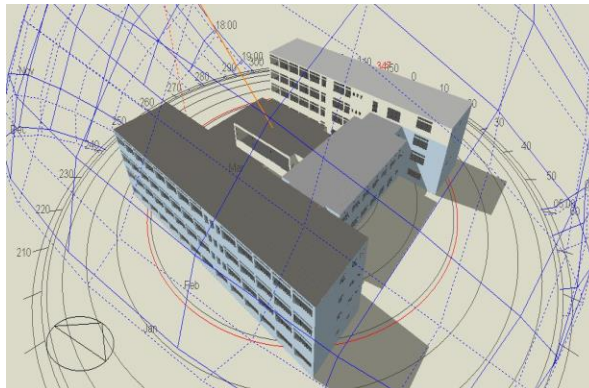
5. Energy Modeling Services

Energy modeling is the process of running a design through software to analyze the building's potential energy consumption.

Early in the design process, energy modeling can evaluate the building's **shape, orientation, envelope elements** and **daylight access**.

Additional energy modeling can test options for mechanical and electrical systems. Therefore, it can provide information about:

- Assessment of **different technologies**
- Optimal **equipment sizing** and **partial loads**
- Equipment **installed capacity downsizing**
- Assessment of HVAC systems **Control strategies**
- **Future climate performance**



6. Commissioning

Commissioning agents are third-party specialists who review documents and construction work. They help ensure systems designed and **constructed to expectations and operate correctly before occupancy**.

Mechanical and electrical commissioning will assess HVAC equipment components, thermostats, lighting controls, and any other building systems that impact performance.

An envelope commissioning to check windows, doors, curtain walls, and roof assemblies can also take place.

Although commissioning is an additional cost, it **minimizes inefficiencies** and reduces the likelihood of **future maintenance** issues.

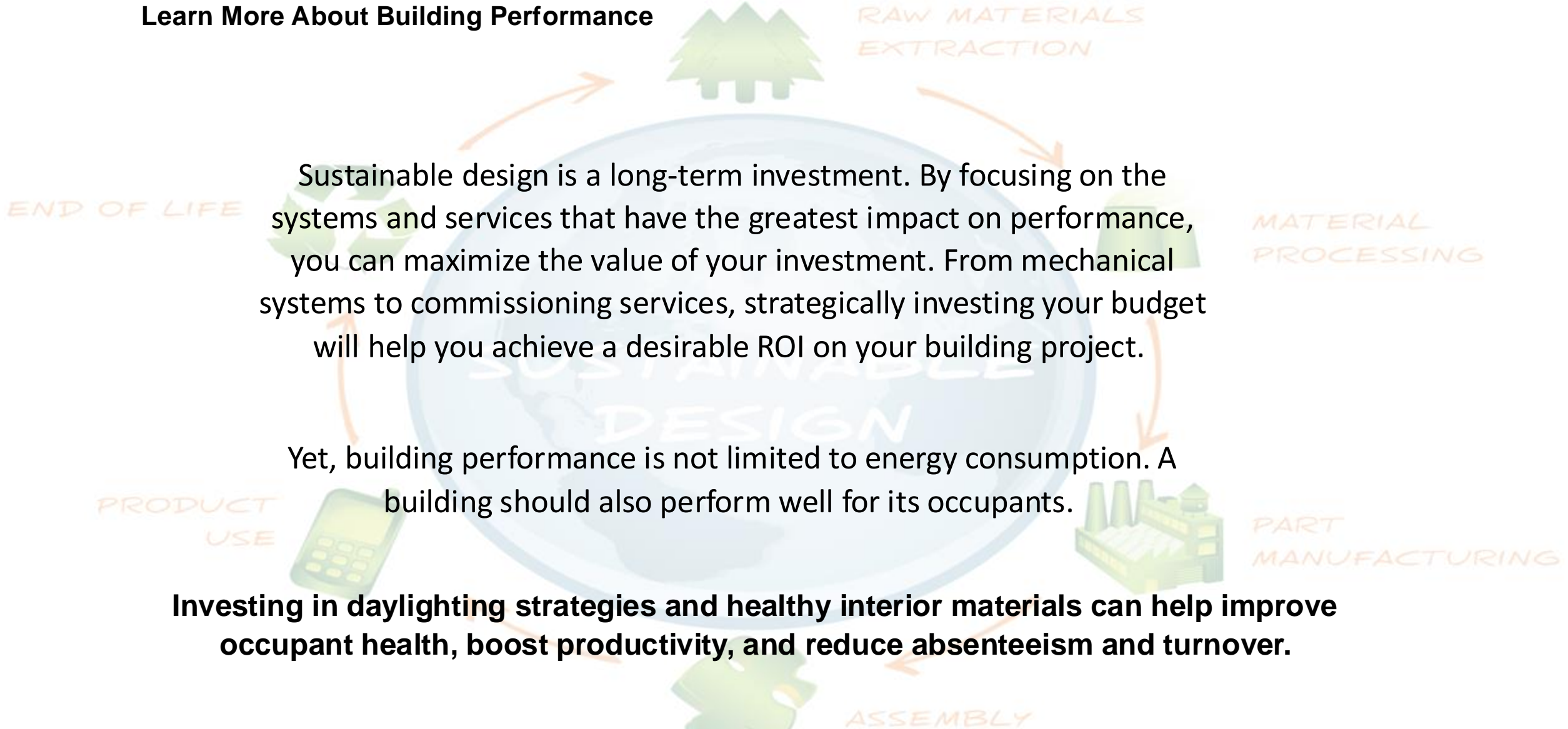


Commissioning



Systems and Services that Improve Building Performance

Learn More About Building Performance

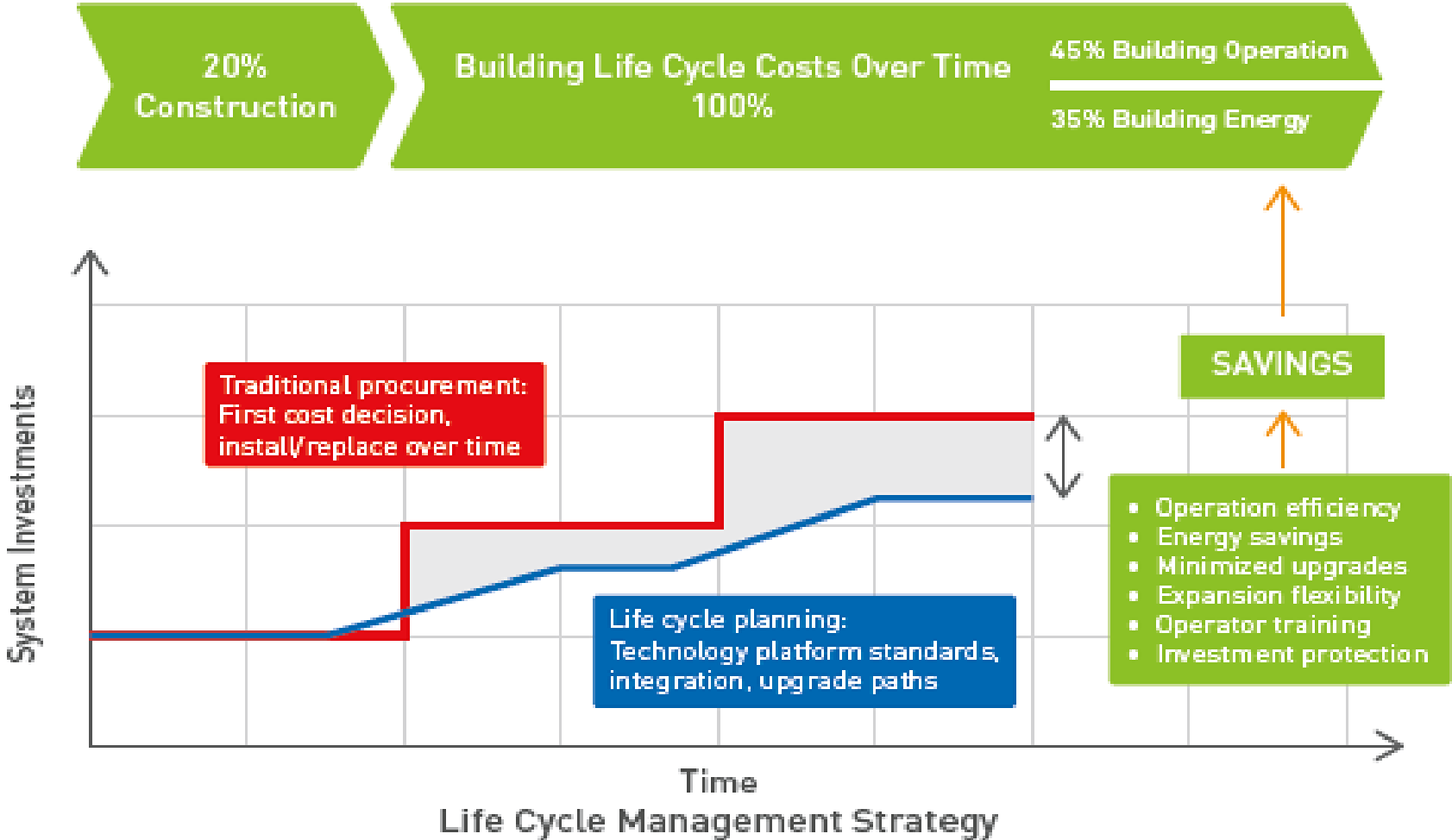


Sustainable design is a long-term investment. By focusing on the systems and services that have the greatest impact on performance, you can maximize the value of your investment. From mechanical systems to commissioning services, strategically investing your budget will help you achieve a desirable ROI on your building project.

Yet, building performance is not limited to energy consumption. A building should also perform well for its occupants.

Investing in daylighting strategies and healthy interior materials can help improve occupant health, boost productivity, and reduce absenteeism and turnover.

ROI of High-Performance Design



Source: Siemens Industry, Inc., 2013

ROI of High-Performance Design

ROI: Increasing asset values

Owners and developers are interested in the financial upsides of high-performance design, particularly increasing asset or market value. Green labeling and operational cost reductions help boost a property's marketability and asset value.

ROI: Reducing operational costs

Out-of-pocket operational expenses add up fast and can account for up to 15% of a company's total business expenses, creating a huge incentive for owners, tenants, and society to drive down costs with high-performance design.

ROI: Healthier, more productive occupants

Our indoor environments have a direct impact on our health and wellness. High-performance design elements, such as air quality, thermal comfort, and daylighting, can significantly improve occupant health.

ROI: Codes, standards, & reporting on resilient design

Designing beyond building codes and standards provides significant resilience benefits to both building owners and occupants.

ROI: The economic case for resilient design

The climate crisis has long-term economic consequences. Incorporating resilient design helps establish economic resilience to better withstand and recover from the unexpected.

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THANK YOU! Q & A

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